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TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)
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**UNITED STATES ARMY
ENVIRONMENTAL HYGIENE
AGENCY**

ABERDEEN PROVING GROUND, MD 21010

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36747a
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND
STUDY NO. 75-51-0013-80
OCTOBER 1976-APRIL 1980

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| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------|
| 1. REPORT NUMBER 75-51-0013-80 | 2. GOVT ACCESSION NO. AD-A086487 | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) Topical Hazard Evaluation Program of Candidate Insect Repellent AI3-36747a, US Department of Agriculture Proprietary Compound, Study No. 75-51-0013-80, October 1976 to April 1980. | | 5. TYPE OF REPORT & PERIOD COVERED Final, Oct 76 - Apr 80 |
| 7. AUTHOR(s) ALLEN W. SINGER, CPT, VC | | 6. PERFORMING ORG. REPORT NUMBER |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD 21010 | | 8. CONTRACT OR GRANT NUMBER(s) 13.22 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS Commander US Army Health Services Command Fort Sam Houston, TX 78234 | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) 9) Final Rept. | | 12. REPORT DATE Oct 76 - Apr 80 |
| | | 13. NUMBER OF PAGES 4 |
| | | 15. SECURITY CLASS. (of this report) Unclassified |
| | | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |
| 16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. (14) 42AEHA-75-51-0013-20 | | |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) 11) 14 Final | | |
| 18. SUPPLEMENTARY NOTES | | |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) AI3-36747a Topical Hazard Evaluation Program Eye Irritation USDA Proprietary Compound Primary Skin Irritation Approximate Lethal Dose Skin Sensitization | | |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A preliminary hazard evaluation of AI3-36747a was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound proved to be a moderate sensitizer in guinea pigs, and caused mild primary skin and eye irritation in rabbits. It was recommended that AI3-36747a, USDA proprietary compound, not be approved for further testing as a candidate insect repellent. | | |

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U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY 584-3980
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT-T/WP

17 JUN 1980

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellent
AI3-36747a, US Department of Agriculture Proprietary Compound,
Study No. 75-51-0013-80, October 1976 to April 1980

Executive Secretary
Armed Forces Pest Management Board
Forest Glen Section, WRAMC
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed report follows:

A preliminary hazard evaluation of AI3-36747a was performed by means of laboratory animal studies using rats, rabbits, and guinea pigs. The technical grade compound proved to be a moderate sensitizer in guinea pigs, and caused mild primary skin and eye irritation in rabbits. It was recommended that AI3-36747a, USDA proprietary compound, not be approved for further testing as a candidate insect repellent.

FOR THE COMMANDER:

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John F. Mazur
JOHN F. MAZUR
MAJ, MSC

Director, Laboratory Services

CF:
HQDA (DASG-PSP)
Cdr, HSC (HSPA-P)
Dir, Advisory Ctr on Tox, NRC
Supt, AHS (HSA-IPM)
USDA, ARS (Dr. Terrence McGovern)
USDA, ARS-Southern Region

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U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

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TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36747a
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND
STUDY NO. 75-51-0013-80
OCTOBER 1976-APRIL 1980

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, Florida, 21 October 1976.

b. Memorandum of Understanding between the US Army Environmental Hygiene Agency; the US Army Health Services Command; the Department of the Army Office of The Surgeon General; the Armed Forces Pest Control Board; and the US Department of Agriculture, Agricultural Research, Science and Education Administration; titled, Coordination of Biological and Toxicological Testing of Pesticides, effective 23 January 1979.

2. REFERENCE. Toxicology Division Procedural Guide, US Army Environmental Hygiene Agency (USAEHA), 1972, revised 1976.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellent, AI3-36747a.

4. SUMMARY OF FINDINGS. A hazard evaluation of the candidate repellent AI3-36747a, US Department of Agriculture (USDA) Proprietary Compound, was conducted by this Agency using New Zealand White rabbits for skin and eye studies, Hartley guinea pigs for a skin sensitization study and Sprague-Dawley rats for determination of oral toxicity. A tabular presentation of animal toxicity data developed in this Agency follow:*†

* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 74-23, revised 1978.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

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TABLE. PRESENTATION OF DATA

| Test | Results | Interpretation |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <u>SKIN IRRITATION STUDIES</u> | | |
| <u>Rabbits</u> | | |
| Single 24-hour application to intact and abraded skin of New Zealand White rabbits. | Compound AI3-36747a caused a mild irritation of the intact skin and the skin surrounding an abrasion. | USAEHA Category II (ref Appendix). |
| 0.5 mL technical grade compound applied to each of six rabbits. | | |
| <u>EYE IRRITATION STUDIES</u> | | |
| <u>Rabbits</u> | | |
| Single 24-hour application of 0.1 mL technical grade compound to one eye of each of six New Zealand White rabbits. | Compound AI3-36747a caused mild corneal injury in five of six rabbits, and mild conjunctival injury in all six rabbits. One of the injured corneas showed evidence of injury at 72 hours, but all had healed by 7 days. | USAEHA Category C (ref Appendix). |
| <u>APPROXIMATE LETHAL DOSE (ALD)</u> | | |
| <u>Oral</u> | | |
| Rats (male) - no diluent | ALD = 4900 mg/kg | Presents little lethal hazard from accidental ingestion. |

Study No. 75-51-0013-80, Oct 76 - Apr 80

| Test | Results | Interpretation |
|------|---------|----------------|
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SENSITIZATION STUDIES

Guinea Pigs (Male)

Intradermal injections of 0.1 mL of a 0.1 percent solution (w/v) of AI3-36747a or of dinitrochlorobenzene (DNCB)* in a mixture containing 1 volume of propylene glycol and 29 volumes of saline.

Ten test guinea pigs were given 10 sensitizing doses over a 3-week period. After 2 weeks rest, they were challenged with ID injections of test compound.

Challenge dose of AI3-36747a produced mild sensitization reactions in 6 of 10 guinea pigs.

Compound AI3-36747a produced a sensitization reaction under test conditions and may be expected to produce a sensitization reaction in man.

Ten positive control guinea pigs were sensitized over 3 weeks with DNCB. After 2 weeks rest, they were challenged with ID injections of DNCB.

Challenge dose of DNCB in positive control guinea pigs produced a marked sensitization reaction in 10 out of 10 guinea pigs.

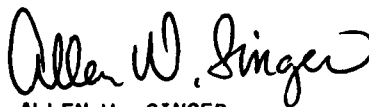
DNCB produced a marked reaction, indicating the guinea pigs respond to sensitizing agents.

* A known skin sensitizer

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5. CONCLUSION. Technical grade compound AI3-36747a caused a moderate sensitization reaction in 6 of 10 guinea pigs, and mild skin and eye irritation in rabbits. Potential for human sensitization and/or irritation prevents classifying this repellent as nonhazardous.

6. RECOMMENDATION. Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-36747a, USDA Proprietary Compound, not be approved for further testing as a candidate insect repellent.



ALLEN W. SINGER
CPT, VC
General Veterinary Officer
Toxicology Division

APPROVED:



ARTHUR H. MCCREESH, Ph.D.
Chief, Toxicology Division

APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.